

CLAIMS:

1. Unique structured lipids obtained from interesterfying coconut oil with free fatty acids obtained from hydrolysis of triglycerides of a vegetable source, said structured lipids contain up to 46mol % of omega 6 polyunsaturated fatty acids and rich in medium chain fatty acids.
2. Unique structured lipids as claimed in claim 1, wherein the structured lipids comprise lauric acid that produces quick energy for critically ill patients.
3. Unique structured lipids as claimed in claim 1, wherein the structured lipids are rich in MCFA (Medium Chain Fatty Acid) and n-6 PUFA (Polyunsaturated fatty acid), which is nutritionally beneficial in being hypocholesterolemic and hypotriglyceridemic.
4. A unique structured lipid as claimed in claim 1, wherein the structured lipids having cholesterol-lowering capacity in the range of 10- 36%.
5. A unique structured lipid as claimed in claim 1, wherein the recovery of scale up of structured lipids is in the range of 88- 92%.
6. Unique structured lipids as claimed in claim 1, wherein the structured lipids comprise n-6 PUFA to modulate eicosanoid production in immune compromised patients.
7. A unique structured lipid as claimed in claim 1, wherein the structured lipids are having a very low melting point 12-15°C that remains as a liquid without phase separation.
8. A unique structured lipids as claimed in claim 1, wherein the structured lipids are having a safflower oil fatty acids and triaglycerols of coconut oil for optimal nutrition.

9. A unique structured lipid as claimed in claim 1, wherein the structured lipids comprise n-6 PUFA levels from 1.8% in the unmodified coconut oil to 45.5% in the structured lipids.

10. A unique structured lipids as claimed in claim 1, wherein the serum and cholesterol lowering capacity of the lipids in mammals is 10% and 36% respectively.

11. A process for production of cholesterol lowering structured lipids from cod liver oil rich in omega 6 polyunsaturated fatty acids (omega 6 PUFA), said process comprising;

- (a) hydrolyzing triglycerides of vegetable oil source by known method to obtain free fatty acids rich in omega 6 PUFA;
- (b) interesterifying coconut oil with the free fatty acids obtained from step(a) at a preferable molar ratio of 1:3 molar ratio;
- (c) incubating with immobilized sn-1-3 lipase at a temperature range of 37-55⁰C for a period of 6-48 hours using a solvent for enzymatic acidolysis thereby incorporating the required acyl groups into specific positions of the triacylglycerols;
- (d) separating the reaction products using adsorption chromatography using solvents selected from ethers, hexane and optionally with 1 part of acetic acid to obtain the structured lipids; and
- (e) recovering the structured lipids by scaling up in the range of 88-92%.

12. A process as claimed in claim 11, wherein the triglycerides are selected from a natural sources namely coconut oil.

13. A process as claimed in claim 11, wherein the fatty acids are selected from a vegetable source of safflower oil.

14. A process as claimed in claim 11, wherein the ethers are selected from group comprising petroleum ether, diethyl ether.

15. A process as claimed in claim 11, the solvent is selected from petroleum ether, dioxane, isooctane, n- hexane, toluene.
16. A process as claimed in claim 11, wherein the ratio of ethers:hexane used is the range of 85:5 to 95:5.
17. A process as claimed in claim 11, wherein the interesterification is carried out using lipase enzyme at 5-10%(w/w) of the substrates.
18. A process as claimed in claim 11, wherein the immobilized lipase is obtained using *Rhizomucor meihei*.
19. A process as claimed in claim 11, wherein an immobilized lipase obtained from *Rhizomucor meihei* can be used up to 25 cycles without loss of activity, thus ensuring economic viability.